

REMARKS

Claims 1-15 are pending in the application. Claims 1-15 have been rejected. Applicants have amended claims 1, 2, 3, and 10 and cancelled claims 6, 7, 8 and 12. Applicants respectfully request reconsideration of the application in view of the above amendments and the following remarks.

Rejection Under 35 U.S.C. §102(b) – Rockenfeller et al.

In the Office Action, the Examiner rejected claims 1-2, 4 and 8-9 under 35 U.S.C. § 102(b) as being anticipated by Rockenfeller et al. U.S. Patent No. 5,165,247. However, the Examiner has not identified where each limitation of the rejected claims is allegedly found in Rockenfeller et al.

Applicants have amended claim 1 to include the limitations of claims 3, 6 and 7, and have consequently cancelled claims 6 and 7. Accordingly, claim 1 has been amended to recite, in part, that the molded body has a plate-like shape, with the first and second sides of the molded body being flat; and that the heat medium passage and the hydrogen passage are flat.

Applicants respectfully assert that Rockenfeller et al. does not disclose the subject matter as recited in amended claim 1. Specifically, Rockenfeller et al. does not disclose that the molded body has a plate-like shape, with the first and second sides of the molded body being flat, and that the heat medium passage and the hydrogen passage are flat. Therefore, since Rockenfeller et al. does not teach the claimed subject matter recited in claim 1, Applicants' claimed invention is not anticipated by Rockenfeller et al.

Claims 2, 4 and 9 depend from claim 1. Therefore, claims 2, 4 and 9 include all of the limitations of claim 1. Because claim 1 is patentable over the cited art, it follows that

claims 2, 4 and 9 are also patentable for at least similar reasons, based on their dependency and the limitations within the claims. Claim 8 has been cancelled.

Reconsideration and withdrawal of the rejection of claims 1, 2, 4 and 9 under §102(b) is respectfully requested.

Rejection Under 35 U.S.C. §102(b) – Asami et al.

In the Office Action, the Examiner rejected claims 1-4, 6-7 and 9 under 35 U.S.C. § 102(b) as being anticipated by Asami et al. U.S. Patent No. 4,393,924. However, the Examiner has not identified where each limitation of the rejected claims is allegedly found in Asami et al.

Applicants have amended claim 1 to include the limitation of claim 8 and have consequently cancelled claim 8. Accordingly, claim 1 has been amended to recite, in part, that a filter forms a hydrogen passage. Support for this amendment is found on page 8, lines 16-30 of the specification .

Applicants respectfully assert that Asami et al. does not disclose the subject matter as recited in amended claim 1. Specifically, Asami et al. does not disclose a filter forming a flat hydrogen passage. Furthermore, Asami et al. fails to disclose a molded body formed by compressing a hydrogen storage material powder. Therefore, since Asami et al. does not teach the claimed subject matter recited in claim 1, Applicants' claimed invention is not anticipated by Asami et al.

Claims 2, 3, 4 and 9 depend from claim 1. Therefore, claims 2, 3, 4 and 9 include all of the limitations of claim 1. Because claim 1 is patentable over the cited art, it follows that claims 2, 3, 4 and 9 are also patentable for at least similar reasons, based on their dependency and the limitations within the claims. Claims 6 and 7 have been cancelled.

Reconsideration and withdrawal of the rejection of claims 1, 2, 3, 4 and 9 under §102(b) is respectfully requested.

Rejection Under 35 U.S.C. §102(b) – Ishikawa et al.

In the Office Action, the Examiner rejected claims 1-2, 4-5 and 9 under 35 U.S.C. § 102(b) as being anticipated by Ishikawa et al. U.S. Patent No. 4,609,038. However, the Examiner has not identified where each limitation of the rejected claims is allegedly found in Ishikawa et al.

Applicants have amended claim 1 to include the limitations of claims 3, 6 and 7, and have consequently cancelled claims 6 and 7. Accordingly, claim 1 has been amended to recite, in part, that the molded body has a plate-like shape, with the first and second sides of the molded body being flat; and that the heat medium passage and the hydrogen passage are flat.

Applicants respectfully assert that Ishikawa et al. does not disclose the subject matter as recited in amended claim 1. Specifically, Ishikawa et al. does not disclose that the molded body has a plate-like shape, with the first and second sides of the molded body being flat, and that the heat medium passage and the hydrogen passage are flat. Furthermore, Ishikawa et al. does not disclose that the hydrogen passage is formed by a filter. Therefore, since Ishikawa et al. does not teach the claimed subject matter recited in claim 1, Applicants' claimed invention is not anticipated by Ishikawa et al.

Claims 2, 4, 5 and 9 depend from claim 1. Therefore, claims 2, 4, 5 and 9 include all of the limitations of claim 1. Because claim 1 is patentable over the cited art, it follows that claims 2, 4 and 9 are also patentable for at least similar reasons, based on their dependency and the limitations within the claims. Claim 7 has been cancelled.

Reconsideration and withdrawal of the rejection of claims 1, 2, 3, 4 and 9 under §102(b) is respectfully requested.

Rejection Under 35 U.S.C. §103 - Rockenfeller et al. in view of Ishikawa et al.

In the Office Action, the Examiner rejected claims 1-2, 4-5 and 8-9 under 35 U.S.C. § 103 as being unpatentable over Rockenfeller et al. in view of Ishikawa et al. The Examiner also rejected claims 1-7 and 9 under 35 U.S.C. § 103 as being unpatentable over Rockenfeller et al. in view of Ishikawa et al. According to the Examiner, Rockenfeller et al. discloses all the claimed features of the invention with the exception of the body being molded and compressed.

However, as discussed above, Rockenfeller et al. and Ishikawa et al. do not teach or disclose, either individually or in combination, all the claimed features of the invention.

Applicants have amended claim 1 to include the limitations of claims 3, 6, 7 and 8, and have consequently cancelled claims 6, 7 and 8. Accordingly, claim 1 has been amended to recite, in part, that the molded body has a plate-like shape, with the first and second sides of the molded body being flat; that the heat medium passage and the hydrogen passage are flat; and that the hydrogen passage is formed by a filter.

Applicants respectfully assert that Rockenfeller et al. and Ishikawa et al. do not teach or suggest, either individually or in combination, the subject matter as recited in amended claim 1. Specifically, Ishikawa et al. and Rockenfeller et al. do not disclose that the molded body has a plate-like shape, with the first and second sides of the molded body being flat, that the heat medium passage and the hydrogen passage are flat, and the hydrogen passage is formed by a filter. Therefore, since Rockenfeller et al. and Ishikawa et al. do not teach or suggest the claimed

subject matter recited in claim 1, Applicants' claimed invention is not obvious over the references of record.

Claims 2, 3, 4, 5 and 9 depend from claim 1. Therefore, claims 2, 3, 4, 5 and 9 include all of the limitations of claim 1. Because claim 1 is patentable over the cited art, it follows that claims 2, 3, 4, 5 and 9 are also patentable for at least similar reasons, based on their dependency and the limitations within the claims.

Reconsideration and withdrawal of the rejection of claims 1, 2, 3, 4, 5 and 9 under §103 is respectfully requested.

Rejection Under 35 U.S.C. §103 - Rockenfeller et al. and Asami et al.

In the Office Action, the Examiner rejected claims 5 under 35 U.S.C. § 103 as being unpatentable over Rockenfeller et al. and Asami et al. According to the Examiner, Rockenfeller et al. and Asami et al. disclose all the claimed features of the invention with the exception of the specifically claimed material.

However, as discussed above, Rockenfeller et al. and Asami et al. do not teach or disclose, either individually or in combination, all the claimed features of the invention.

Applicants have amended claim 1 to include the limitation of claim 8 and have consequently cancelled claim 8. Accordingly, claim 1 has been amended to recite, in part, that a hydrogen passage is formed by a filter. Support for this amendment is found on page 8, lines 16-30 of the specification.

Applicants respectfully assert that neither Rockenfeller et al. nor Asami et al. discloses or suggests the subject matter as recited in amended claim 1. Specifically, Rockenfeller et al. and Asami et al. do not teach or suggest a filter forming a flat hydrogen passage. Furthermore, neither Rockenfeller et al. nor Asami et al. discloses or suggests a molded

body formed by compressing a hydrogen storage material powder. Therefore, since Rockenfeller et al. and Asami et al. do not teach or suggest the claimed subject matter recited in claim 1, Applicants' claimed invention is not rendered obvious over the references of record.

Claim 5 depends from claim 1. Therefore, claim 5 includes all of the limitations of claim 1. Because claim 1 is patentable over the cited art, it follows that claim 5 is also patentable for at least similar reasons, based on their dependency and the limitations within the claim.

Reconsideration and withdrawal of the rejection of claim 5 under §103 is respectfully requested.

Rejection Under 35 U.S.C. §103 - Rockenfeller et al. in view of Nikai, Januschkowetz, or Yanagi et al.

In the Office Action, the Examiner rejected claims 3, 6, 7, 10, 11, 12 under 35 U.S.C. § 103 as being unpatentable over Rockenfeller et al. in view of Nikai JP 3-31663, Januschkowetz U.S. Patent 4,581,049, or Yanagi et al JP 3-244974. According to the Examiner, Rockenfeller et al. discloses all the claimed features of the invention with the exception of the specifically claimed shapes.

The Examiner also rejected Claims 3, 6, 7, 10, 11, 12 under 35 U.S.C. § 103 as being unpatentable over Ishikawa et al. in view of Nikai, Januschkowetz, or Yanagi et al. According to the Examiner, Ishikawa et al. discloses all the claimed features of the invention with the exception of the specifically claimed shapes.

The Examiner asserts that Nikai and Yanagi et al. disclose that the molded body and the flow passages are flat for the purpose of obtaining a compact heat exchanger which generates an excellent absorbing and desorbing surface efficiency. However, Applicants

respectfully assert that the hydrogen passages of Nikai and Yanagi are merely open space. Thus, neither Nikai nor Yanagi et al. discloses or suggests a structure for defining the hydrogen passage. Furthermore, neither reference discloses that a filter forms a flat hydrogen passage, as in the Applicants' claimed invention.

Similarly, the Examiner asserts that Januschkowetz discloses that the molded body and the flow passages are flat for the purpose of obtaining a compact heat exchanger which generates an excellent absorbing and desorbing surface efficiency.

Referring to Figure 1 of Januschkowetz, Applicants respectfully assert that the spacer 24 pressing the grid network 22 defines a hydrogen passage. However, the structure of Fig. 1 probably cannot be inverted, and two or more units probably cannot be arranged side by side. Since hydrogen absorbent alloy is a metal, repeated expansions due to absorption and contractions due to emission create countless cracks in the hydrogen absorbent alloy which make the alloy significantly fragile. Thus, even if an absorbent is formed into a molded body as in the present invention, a structure in which the molded body is partly supported by a spacer, as in Januschkowetz, will have insufficient strength for use in vehicles. In the Applicants' claimed invention, however, since the filter contacts the molded body at a wide area, the molded body receives relatively small stress.

Furthermore, Rockenfeller et al., Nikai, Januschkowetz and Yanagi et al. do not teach or suggest, either individually or in combination, a filter forming a flat hydrogen passage, as claimed by the Applicants.

Applicants contend that since the cited references do not teach or suggest the claimed subject matter recited in claims 3, 10 and 11 Applicants' claimed invention clearly would

not have been obvious over the references of record. Applicants have cancelled claims 6, 7 and 12.

Reconsideration and withdrawal of the rejection of claims 3, 10 and 11 under §103 is respectfully requested.

Rejection of Claim 13 Under 35 U.S.C. §103

In the Office Action, the Examiner rejected claim 13 under 35 U.S.C. § 103 as being unpatentable over Rockenfeller et al. in view of Nikai, Januschkowetz, or Yanagi et al. as applied to claims 3, 6, 7, 10, 11 and 12 above; and further in view of Onishi et al. JP 62-288495. According to the Examiner, Rockenfeller et al., as modified, discloses all the claimed features of the invention with the exception of the body including a chamber.

The Examiner has also rejected claim 13 under 35 U.S.C. § 103 as being unpatentable over Ishikawa et al. in view of Nikai, Januschkowetz, or Yanagi et al. as applied to claims 3, 6, 7, 10, 11 and 12 above; and further in view of Onishi et al. According to the Examiner, Ishikawa et al., as modified, discloses all the claimed features of the invention with the exception of the body including a chamber.

However, as discussed above, neither Rockenfeller et al., as modified, nor Ishikawa et al., as modified, discloses or suggests all the claimed features of the invention. Specifically, neither cited reference teaches or suggests a filter forming a flat hydrogen passage.

The Examiner asserts that Onishi et al. discloses bodies (11) including a chamber for the purpose of an having an efficient packing of the bodies within a housing which increases the filling rate of hydrogen. However, Onishi et al. fails to disclose or suggest a filter forming a flat hydrogen passage, as claimed by the Applicants.

Applicants contend that since the cited references do not teach or suggest the claimed subject matter recited in claim 10, Applicants' claimed invention clearly would not have been obvious over the references of record.

Claim 13 depends from claim 10. Therefore, claim 13 includes all of the limitations of claim 10. Because claim 10 is patentable over the cited art, it follows that claim 13 is also patentable for at least similar reasons, based on its dependency and the limitations within the claim.

Reconsideration and withdrawal of the rejection of claim 13 under §103 is respectfully requested.

Rejection of Claim 14 Under 35 U.S.C. §103

In the Office Action, the Examiner rejected claim 14 under 35 U.S.C. § 103 as being unpatentable over Rockenfeller et al. in view of Nikai, Januschkowetz, or Yanagi et al. as applied to claims 3, 6, 7, 10, 11 and 12 above; and further in view of Davis U.S. Patent 6,237,680. According to the Examiner, Rockenfeller et al. as modified, discloses all the claimed features of the invention with the exception of a connecting section between upstream and downstream sections.

The Examiner has also rejected Claim 14 under 35 U.S.C. § 103 as being unpatentable over Ishikawa et al. in view of Nikai, Januschkowetz, or Yanagi et al. as applied to claims 3, 6, 7, 10, 11 and 12 above; and further in view of Davis. According to the Examiner, Ishikawa et al., as modified, discloses all the claimed features of the invention with the exception of a connecting section between upstream and downstream sections.

However, as discussed above, neither Rockenfeller et al., as modified, nor Ishikawa et al., as modified, discloses or suggests all the claimed features of the invention. Specifically, neither cited reference teaches or suggests a filter forming a flat hydrogen passage.

The Examiner asserts that Davis teaches a connecting section between upstream and downstream sections for the purpose of increasing the fluid flow length, which increases the time the fluid exchanges heat, which ultimately increases the overall heat exchange efficiency. However, Applicants respectfully assert that Davis fails to disclose or suggest a filter forming a flat hydrogen passage, as claimed by the Applicants.

Applicants contend that since the cited references do not teach or suggest the claimed subject matter recited in claim 10, Applicants' claimed invention clearly would not have been obvious over the references of record.

Claim 14 depends from claim 10. Therefore, claim 14 includes all of the limitations of claim 10. Because claim 10 is patentable over the cited art, it follows that claim 14 is also patentable for at least similar reasons, based on its dependency and the limitations within the claim.

Reconsideration and withdrawal of the rejection of claim 14 under §103 is respectfully requested.

Rejection of Claim 15 Under 35 U.S.C. §103

In the Office Action, the Examiner rejected Claim 15 under 35 U.S.C. § 103 as being unpatentable over Rockenfeller et al. in view of Nikai, Januschkowetz, or Yanagi et al. as applied to claims 3, 6, 7, 10, 11 and 12 above; and further in view of Davis; and further in view of Farfaletti-Casali et al. U.S. Patent 4,362,207. According to the Examiner, Rockenfeller et al.,

as modified, discloses all the claimed features of the invention with the exception of the header including both upstream and down stream sections.

The Examiner also rejected Claim 15 under 35 U.S.C. § 103 as being unpatentable over Ishikawa et al. in view of Nikai, Januschkowetz, or Yanagi et al. as applied to claims 3, 6, 7, 10, 11 and 12 above; and further in view of Davis; and further in view of Farfaletti-Casali et al. According to the Examiner, Ishikawa et al., as modified, discloses all the claimed features of the invention with the exception of the header including both upstream and down stream sections.

However, as discussed above, neither Rockenfeller et al., as modified, nor Ishikawa et al., as modified, discloses or suggests all the claimed features of the invention. Specifically, neither cited reference teaches or suggests a filter forming a flat hydrogen passage.

The Examiner asserts that Farfaletti-Casali et al. discloses a header including both upstream and down stream sections for the purpose of reducing the number of parts and reducing overall size, weight and cost. However, Applicants respectfully assert that Farfaletti-Casali et al. fails to disclose or suggest a filter forming a flat hydrogen passage, as claimed by the Applicants.

Applicants contend that since the cited references do not teach or suggest the claimed subject matter recited in claim 10, Applicants' claimed invention clearly would not have been obvious over the references of record.

Claim 15 depends indirectly from claim 10. Therefore, claim 15 includes all of the limitations of claim 10. Because claim 10 is patentable over the cited art, it follows that claim 15 is also patentable for at least similar reasons, based on its dependency and the limitations within the claim.

Reconsideration and withdrawal of the rejection of claim 15 under §103 is respectfully requested.

Rejection Under 35 U.S.C. §103 - Rockenfeller et al.; in view of Ishikawa et al.; and further in view of Nikai, Januschkowetz, or Yanagi et al.

In the Office Action, the Examiner has rejected Claim 3, 6, 7, 10, 11, 12 under 35 U.S.C. §103 as being unpatentable over Rockenfeller et al. in view of Ishikawa et al. as applied to claims 1, 2, 4, 5, 8, and 9 above; and further in view of Nikai, Januschkowetz, or Yanagi et al. According to the Examiner, Rockenfeller et al., as modified, discloses all the claimed features of the invention with the exception of the claimed shapes.

However, as discussed above, neither Rockenfeller et al., as modified, nor Ishikawa et al., as modified, discloses or suggests all the claimed features of the invention. Specifically, neither cited reference teaches or suggests a filter forming a flat hydrogen passage.

In addition, Applicants respectfully assert that neither Ishikawa et al., Nikai, Januschkowetz, nor Yanagi et al., discloses or suggests a filter forming a flat hydrogen passage.

Applicants contend that since the cited references do not teach or suggest the claimed subject matter recited in claims 3, 10 and 11, Applicants' claimed invention clearly would not have been obvious over the references of record. Applicants have cancelled claims 6, 7 and 12.

Reconsideration and withdrawal of the rejection of claims 3, 10 and 11 under §103 is respectfully requested.

Rejection of Claims 13, 14, and 15 Under 35 U.S.C. §103

In the Office Action, the Examiner rejected Claim 13 under 35 U.S.C. § 103 as being unpatentable over Rockenfeller et al. in view of Ishikawa et al. as applied to claims 1, 2, 4,

5, 8, and 9 above; and further in view of Nikai, Januschkowetz, or Yanagi et al. as applied to claims 3, 6, 7, 10, 11 and 12 above; and further in view of Onishi et al. According to the Examiner, Rockenfeller et al. as modified, discloses all the claimed features of the invention with the exception of the body including a chamber.

The Examiner rejected Claim 14 under 35 U.S.C. § 103 as being unpatentable over Rockenfeller et al. in view of Ishikawa et al. as applied to claims 1, 2, 4, 5, 8, and 9 above; and further in view of Nikai, Januschkowetz, or Yanagi et al. as applied to claims 3, 6, 7, 10, 11 and 12 above; and further in view of Davis. According to the Examiner, Rockenfeller et al., as modified, discloses all the claimed features of the invention with the exception of a connecting section between upstream and downstream sections.

The Examiner has rejected Claim 15 under 35 U.S.C. § 103 as being unpatentable over Rockenfeller et al. in view of Ishikawa et al. as applied to claims 1, 2, 4, 5, 8, and 9 above; and further in view of Nikai, Januschkowetz, or Yanagi et al. as applied to claims 3, 6, 7, 10, 11 and 12 above; and further in view of Davis; and further in view of Farfaletti-Casali et al. According to the Examiner, Rockenfeller et al. as modified, discloses all the claimed features of the invention with the exception of the header including both upstream and down stream sections.

However, as discussed above, Rockenfeller et al., as modified, does not teach or suggest all the claimed features of the invention. Specifically, Rockenfeller et al. does not teach or suggest a filter forming a flat hydrogen passage.

In addition, Applicants respectfully assert that neither Ishikawa et al., Nikai, Januschkowetz, Yanagi et al., Onishi et al., Davis, nor Farfaletti-Casali et al. discloses or suggests a filter forming a flat hydrogen passage.

Applicants contend that since the cited references do not teach or suggest the claimed subject matter recited in claims 13, 14 and 15 Applicants' claimed invention clearly would not have been obvious over the references of record.

Reconsideration and withdrawal of the rejection of claims 13, 14 and 15 under §103 is respectfully requested.

CONCLUSION

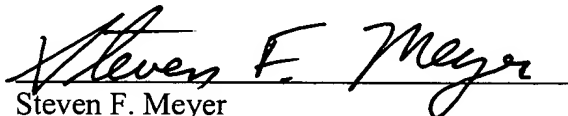
Based on the foregoing remarks, it is respectfully submitted that the claims as currently pending are patentable and in condition for allowance. Reconsideration of the application and withdrawal of the rejections are respectfully requested.

The Commissioner is hereby authorized to charge any additional fees which may be required for the timely consideration of this amendment under 37 C.F.R. §§ 1.16 and 1.17, or credit any overpayment to Deposit Account No. 13-4500, Order No. 5000-4853.

Respectfully submitted,
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Dated: July 24, 2003

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